

King (J. H.)

AN

# INTRODUCTORY LECTURE,

DELIVERED BY

**JOHN KING, M.D.**

PROF. OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN, IN THE ECLECTIC  
MEDICAL INSTITUTE OF CINCINNATI.

BEFORE THE

## ECLECTIC MEDICAL CLASS,

IN GREENWOOD HALL, NOV. 10, 1852

27100

CINCINNATI:

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1852.

## CORRESPONDENCE.

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At a meeting of the Students of the Eclectic Medical Institute of Cincinnati, held in the Hall of the College Edifice, Nov. 11th, 1852, THOS. R. WARD was called to the chair, and CHARLES C. MOORE was appointed Secretary.

On motion, Resolved, That a Committee be appointed to solicit of Prof. JNO. KING, a copy of his Introductory Address delivered before the Class in Greenwood Hall, Nov. 10th; and that such Committee consist of one representative from each State represented in the class.

CHARLES C. MOORE, Secretary.

THOS. R. WARD, Chairman.

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*Cincinnati, November 20th, 1852.*

PROF. J. KING:

Dear Sir:—Knowing as we do, the extensive use made of calomel, and the frightful inroads it is making upon the constitution of unsuspecting victims, to whom it is administered as medicine, we feel bound to humanity to use every laudable means of expelling this insinuating monster from our midst, and believing that the wide circulation of the late Introductory address delivered by you in Greenwood Hall, in which you so fully exposed the secret workings of the deceiver, would prove most potent in aiding towards its extinction, we would, therefore, in behalf of the class, respectfully solicit a copy for publication.

Respectfully Yours,

WM. A. LEVANWAY, N. Y., Ch'n.

THOS. R. WARD, Ala., Sec'y.

N. G. LYNCH, Mich.,  
J. BROTHERS, Penn.,  
J. B. JOHNSON, S. C.,  
D. T. PARROT, Iowa,  
J. D. COLLINS, Tenn.,  
I. TIBBETTS, Ky.,  
C. W. JEFFRIES, Mo.,  
S. MCINTYRE, Ill.,  
L. J. JONES, N. C.,  
E. H. LAKE, Maine.

J. L. ISAACS, Ark.,  
T. J. FENTRESS, Va.,  
T. L. FALKNER, Ia.,  
J. ANTON, Ga.,  
J. A. CARLISLE, Miss.,  
B. W. SPEAR, Ohio,  
C. G. CROSS, Wis.,  
W. S. SEVERANCE, Mass.,  
M. DUNSTER, Vt.

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*Cincinnati, Nov. 23th, 1852.*

GENTLEMEN: At a late period of this introductory course, I was requested to give an address, describing the action of mercury upon the human system, and, to avoid delay, I selected, during its preparation, such portions of previous lectures and publication as were suitable for the occasion, and which contain views that I still consider correct and unanswerable. With this explanation, I cheerfully place the address at your disposal, trusting that its publication may effect the results which you anticipate.

Yours Respectfully,

JNO. KING

To W. A. LEVANWAY, N. Y., THOS. R. WARD,  
Ala., and others of Committee

## Professor King's Introductory Lecture.

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In the remarks which we shall hereafter present to your notice, we would especially impress upon your minds, that we are not prejudiced, nor controlled by faction—neither do we fear the closest investigation of the honest mind—we feel confident of our strength—believing it to be truth, *not* the result of imaginary and speculative theories, but founded upon the most unerring principles of philosophy—*facts* and *experience*.

Nor would we have you suppose, that enmity towards those who differ from us in medical opinions has urged us to our present course—far from it—we condemn no man—nor do we condemn any physician for his opinion—if he be honest, he takes that course which he thinks best for the welfare of his patients. He has been led to adopt the views which he professes, by a train of circumstances over which he might have had but little or no control. Had similar circumstances effected us, we would, undoubtedly have adopted similar conceptions.

Those who believe with us, and who sustain our cause—do so—not as many are taught to credit, from a vain desire of differing in medical faith from others—neither from a love of opposition—nor from the unworthy motive of complying with popular prejudice; but solely from an honest conviction of its truth and propriety.

The man who becomes thoroughly satisfied that the course he is pursuing, is erroneous, and continues his adherence to it, recommending it as the only true system, and exerting the most powerful antagonistic influences against every other, can act as no honorable man would; and should be banished not only from the medical world, but from all respectable society. But, he who *extends* his inquiry in the search after truth—who condemns not, without impartial examination—who does not permit himself to be actuated by opinions founded upon a limited study of books;—and whose sole desire is to perfect his profession;—such an one, we do,—we *must* respect, without inquiring whether he be a physician, a preacher, a lawyer, a statesman, or a private citizen. And whatever physician may be found to possess this character, however widely he may differ from us in his professional belief,—we respect him as a citizen, and as a physician, and far be it from us to utter or transact anything, with an intention to injure the reputation, the interest, or the feelings of such a man.

It may be considered an axiom in chemistry, that no substance or agent can contribute to the nourishment of the organism, or to its normal alteration, unless it contains the constituents of blood. We know that gum, or starch, or sugar will not contribute to nutrition, for neither of these articles contains nitrogen, which element has a large share in the formation of the various organs of the body. In the present state of our knowledge respecting organic chemistry, an attempt to feed an animal upon food containing no phosphorus, for the purpose of nourishing the brain; or an attempt to sustain the muscular system with food, from which the potassium and the sodium had been abstracted, would be grossly absurd. The same may be said in relation to the action of medicines upon the organism.

Medical substances *must* contain the constituents which form the particular part of the organism they are destined to effect, ere they can influence any particular organ, so as to change its constitution, and induce the state of health. The vegetable alkaloids, strychnine, morphine, &c., act so energetically upon the nervous system, as to destroy its normal constitution in the minute dose of a few grains. And why? Because they contain almost the identical constitution of brain and nervous matter, and are therefore capacitated to substitute powerfully, one group of atoms for another of the same kind, though, perhaps, not of the same quantity. In the doctrine of isomorphism we have a true expression of these truths; for these atoms being identically the same kind, they substitute each other without difficulty.

To prescribe any medicine which does not contribute to the animal organism, for the purpose of inducing a state of health from disease, is unphilosophical, and not in consonance with the ascertained laws of organic chemistry. Should part of an arch become impaired, would a thorough-bred mason, in order to erect it of the precise shape it was previously, substitute stones of any other form than those originally contained in the part of the arch broken? His judgment would teach him, that in order to repair that arch as solidly, and of the same form as it was originally, it would be necessary to substitute for the rocks which had given away, others, more solid but of precisely the same shape and size.

The case of the physician repairing a diseased organ in the human system, is a parallel one. He ascertains, from the abnormal action of a certain organ, that it is diseased,—that the metamorphosis of its tissues is either retarded, or too much accelerated, and probably the former in every instance. Would he administer in that case a substance which had not the composition of the diseased organ? Wherefore its use? For nothing really could be gained by it;—not an atom of the substance introduced being capable of substituting the atoms metamorphosed from the diseased organ. The idea that an organ can be cured, or brought

to its normal condition, without involving *some* chemical change, is absurd, and to say the least induces a suspicion of the intelligence of its maintainer.

What we have stated, are but the expression of facts as developed by rigid chemical experiment and deductive reasoning, we will dwell no longer upon them, but will proceed to review the action of mercury upon the human system.

It is well known, that as Eclectics, among other things, we contend that the employment of minerals as therapeutic agents, and especially those possessing highly destructive influences on the human organism, is exceedingly improper and unscientific, from the fact that they do not assimilate with any of the constituents of the body, and therefore, when administered internally, must, necessarily, effect deleterious results. And, among this class of agents, the most conspicuous is mercury, and its various preparations in the form of calomel, corrosive sublimate, red precipitate, blue-pill, &c. Were we alone in our condemnation of mercurials as medical agents, or in our exposition of their results some suspicion might be entertained of our honesty; but when those who employ and recommend them for nearly every disease incident to the human frame, are aware of the truthfulness of our objections, and when their published authorities corroborate our statements, and yet they continue in vain endeavors to stamp us in the estimation of the public as propagators of falsehood, ignorance, and misrepresentation, the imputation of dishonesty, could not, in the consideration of any principled mind, consistently rest upon us for a single moment.

Before entering into an investigation of the causes of mercurial action upon the system, it may be proper to acquaint you with the facts that mercury, the Sampson of the old school *Materia Medica*, does not possess the curative virtues attributed to it, and that it not only aggravates the abnormal condition of the organism in many instances, but likewise produces the most disastrous results. And in doing this, lest we be charged with prejudice and misrepresentation, we will not present our own testimony, but will select a few statements from the writings and authorities of those who adhere to the employment of this mineral.

Dr. Samuel Jackson, an old school practitioner, in speaking of the use of mercury in fevers observes: "This fashionable practice I have abandoned since the epidemic of 1822, the commencement of the series of epidemic intermittent, remittent and bilious fevers, that continue still to prevail over so large a portion of the country. I was compelled to renounce the use of it, from witnessing in so many instances, the injurious results of the treatment to the patient. The mercurial action in violent cases, I found, could very rarely be brought on before the intensity of the local inflammations, and the sympathetic fever were on the decline; and then, the inflammations awakened by the mercurial



irritation were not to be desired ; they were nearly as much to be dreaded, as those which constituted the disease. In many cases, after convalescence had commenced, the mercurial action came on, and I had the mortification to be *perfectly convinced*, though no suspicion crossed the mind of the patient, that a rapid recovery had been prevented, and protracted suffering been endured, in consequence of the employment of the remedy though done under the sanction of high authority at home, and 'great names abroad.'

"The mercurial irritation, it is to be kept in mind when it is developed as febrile disturbances in the system are subsiding, does not, in numerous instances induce a salivation ; nor is this effect a necessary consequence of the administration of the mercurial preparations. On the contrary, they often excite, at that time, from the numerous irritations still existing, an extent of action in the mucous tissue of the digestive canal, and the mouth, and which is thence extended into the glands connected with them, transcending the degree in the range of which, secretion is possible. The consequence is inflammation, ulceration, hemorrhages, together with re-excitement of febrile commotion. The new train of symptoms are then frequently set down for a relapse ; and, if the mercurial treatment be instituted, the patient almost assuredly perishes.

"Another effect of the mercurial irritation suddenly displayed in the system exhausted by an attack of fever is, prostration of the powers of the nervous system, and of the heart, with a rapid collapse terminating speedily in death. The patient in these instances, appears to be entering into convalescence ; the fever has ceased from two days to six or seven ; the appetite is improving ; the skin is moist, and has a flabby feeling ; head unembarrassed ; bowels regular. In the midst of these favorable appearances, while all apprehensions are allayed, and a restoration is regarded as beyond a doubt, the patient, in all the cases that have come to my knowledge, is seized in the night with nervous tremors, cold sweats, great anxiety, rapid sinking of the forces, and after a short agony, often before the physician (who has been summoned on the invasion of danger,) can reach his patient the mortal scene has closed."

Dr. Henstis, likewise an old school practitioner, observes : "I have known and seen many cases of salivation in bilious fever, but never have I known an instance wherein I had not every reason to believe that the recovery was thereby retarded. It is certain that patients often recover who have been salivated in this disease ; and this, strange as it may appear, has afforded an argument for the advocates of this medicine to say and to boast, that the cure was effected by mercury ; whereas, the probability is, that had the patient never tasted the article, or experienced its effects, his recovery would have been much more rapid. The unfortu-

nate instances of the failure of a salivation in the cure of fever, are too numerous to leave any doubts as to its pernicious and destructive effects. The horrid spectacles frequently to be seen, as the consequences of the mercurial treatment, are shocking to humanity and disgraceful to the profession. Even were mercury the only alternative, that life is dearly purchased which is bought at the sacrifice of everything that renders life desirable; the constitution broken and destroyed; the person maimed and disfigured, so that it is scarcely recognized by the unfortunate sufferer himself; an object of pity and horror to his friends. Deprived of their teeth, and perhaps of their jaws, we sometimes see these pitiable objects, with distorted features, the jaw, cheeks, and palate having been partially destroyed by mortification, and the remaining portion cicatrized into an unsightly knot, with the mouth distorted from its natural position and drawn obliquely towards the ear, and the lips and cheeks consolidated with the gums. It may be said in reply that such effects seldom occur from a salivation; yet they sometimes happen, and rarely does it fail that the constitution escapes from salivation without sustaining a lasting injury. Were it always in the power of the practitioner to control the operation of mercury, less danger would be sustained or apprehended from it; but unfortunately this is not the case. Calomel is often given to a great extent during the continuance of fever, without producing any sensible effects; and it is only after the solution of the disease, when convalescence is about taking place, that this latent poison breaks forth with tenfold violence. The patient, who a day or two previous, flattered himself with a speedy recovery, now finds himself sadly disappointed, and is doomed to undergo a factitious disease, more tedious and painful than the first."

Dr. Callaghan, remarks; "I most heartily concur, that a complaint trivial in itself, may very readily be converted into one of more serious magnitude by this over-pharmaceutical practice, and by none more readily than the calomelizing plan. The patient supplied with a dozen calomel pills, or half a dozen calomel powders, by his physician not being conscious of anything very serious being connected with his case, pursues his usual avocations, and through inadvertency falls into some slight exposure, when the remedy becomes infinitely worse than the disease. It is true, the practitioner cautioned him perhaps to be aware of this; but why use a remedy fraught with hazard, in cases where it is not imperiously demanded, in a country where the generality of diseases do not require it, and in a climate highly unfavorable to its use. In the case of delicate females, it is peculiarly destructive from their natural irritability of fibre, rendered still more so by their sedentary life, the habits and modes imposed by the structure of that society to which they must conform, with the cares and duties incident to their sex, all conspire

to render them easy and almost certain victims to mercurial action. Only witness the effects of this mineral in the more robust, and judge of its ravages in the more tender. In our being full and lusty, the gait light and elastic, the muscular action firm, the countenance clear, if not ruddy, the gums sound, the teeth unimpaired, and the mind strong, only witness the contrast after having been calomelized for a season or two, in compliance with our biliary hypothesis. The air languid; the muscular action paralyzed, the limbs feeble, the hand tremulous, the countenance sallow, the gums spongy, the teeth gone, the breath fetid, the appetite impaired, the organ of digestion injured, the constitution ten or perhaps twenty years in advance of the natural age of the individual, the mind, that greatest ornament of feminine excellence a wreck, with the entire frame like a living barometer, affected by every change of weather. Such is an outline of the evils entailed on society by our predilection for the use of mercury."

Dr. Robert Jackson says: "Where fever is of the continued kind, whether endemic, epidemic, or contagious, the symptoms violent, the heat ardent, the skin thick and compacted, dry and and torpid, as connected with excessive excitement and precipitate action; or thick, greasy, damp and inanimate, as connected with constriction and diminished energy of the capillary system, calomel is sometimes given to a great extent, mercurial ointment being at the same time rubbed upon the surface in great quantity, without the salivary glands being in any degree affected by it; in other cases, the gums become spongy and livid, the breath emits the mercurial feter, but no increase takes place in the salivary secretion, and no change is effected on the course of the disease, which proceeds uninterruptedly to a fatal or favorable termination, *independently* of saturation of the system with mercury."

Dr. Falconer says that: "There are certain constitutions in which the most dangerous consequences appear from the exhibition of mercury; and yet they have *no marks* by which we can *distinguish* this peculiar tendency; and there is *no method* of arresting the dangerous progress of the medicine, when once in active operation."

Dr. Thacher observes: "Such is the diversity of circumstances in different examples of fever, and so great is the *uncertainty* of the effects of mercury on the system, that *no precise rules for its administration* can be given or regarded. In some instances, a few doses will effect a solution of the fever, while in others, *no quantity within the limits of common prudence* will either produce a salivation, or in any manner induce the desired salutary consequences."

Dr. Warren says: "That salivation increases the irritability of the system, and may sometimes *have laid the foundation of chronic disease, may be admitted*; though a suspicion of it, ought not to



prohibit the use of it as an excellent remedy in some of the above diseases, in the hands of the skilful!’

In the Monthly Journal of Foreign Medicine, Philadelphia, January, 1829, we find the following:—“ M. Colson, surgeon to the Hotel Dieu de Noyou, who has long been engaged in investigating the effects of mercury upon the system, has recently succeeded in detecting the presence of this mineral in the blood of persons to whom it had been administered. In one instance, a young man had swallowed, by mistake, four or five ounces of the liquor of Van Swieten; violent fever supervened, requiring venesection. Furnished with a plate of burnished brass, Mr. Colson directed the jet of blood upon it, and left it in the basin for the space of twenty-five hours, at the end of which time, mercurial stains upon the brass became evident. A similar result was obtained in the other instances. Fourcroy relates in his translation of Ramazzini, that the serum having been collected from a great number of phylctena, which appeared upon the thighs and legs of a gilder, an infinite number of mercurial globules was found in the bottom of the vessel containing it. M. Gaspard has found them in the alvine evacuations; Petronius in the matter ejected by vomiting, where the mineral had been employed in frictions; Rhodius, Breyer, Valvasor, Guidot, Vercelloni, Burghard, Didier, Hæschter, and recently Dr. Cantur, of Turin, in the urine. It has been found in the bones, synovial membranes, in the pleura, and in the lungs. In our own day, M. Dumeril has found it in different parts of the body; M. M. Orfila and Pickel have obtained it by distillation of the brain and nerves; and it is stated in the last number of the *Bull. des Sci. Med.*, that Professor Hunefeld, of Griefswold, has found it in its metallic state in the semi-liquid contents of a lipoma.”

We might continue in this manner, quoting the language of old school physicians themselves, in regard to their favorite agent, but we believe enough has been presented to convince any reasonable person of the complete inadequacy and unfitness of this mineral as a remedy in disease. The next enquiry is, how does mercury effect its pernicious results?

Cullen, according to Prof. Eberle, observes—“ Mercury acts as a stimulus to every sensible and moving fibre of the body. What the peculiar character of the excitement which it produces, may be, *it would be in vain to enquire*; but it appears to be more permanent and universal than that of any other medicinal agent with which we are acquainted.”

The U. S. Dispensatory informs us—“ Of the *modus operandi* of mercury, we know nothing, except that it *probably* acts through the medium of the circulation, and that it possesses a peculiar alterative power over the vital functions, which enables it in many cases to subvert diseased action, by *substituting its own* in their stead.”

To us these are very unsatisfactory explanations ; and having devoted some attention to this subject, believe we have a correct reply to our question : “ How does mercury effect its pernicious results ?

There is a peculiar species of action often observed by the chemist, where a substance itself during its progress of decay, induces the same state in other bodies with which it is brought into contact. Fermentation illustrates this conspicuously. Yeast, itself a substance in an active state of change or decay, added to a solution of sugar, soon induces the same state of *eremacausis* in it ; and this breaking up of old groups into new ones, sugar into carbonic acid and alcohol, goes on rapidly without further aid, till the change is thoroughly finished. All that is required, therefore, is the simple condition, that some body whose atoms are re-arranging themselves into other and less complicated groups, should be brought into contact with this solution of sugar, when this condition of disturbance is communicated to its atoms, and which continues without further aid from the foreign body. It has been ascertained by Liebig, that the analogy between fermentation and digestion is complete. Soon after having reached the stomach, the food is dissolved by the gastric juice, which contains a substance in a state of transformation, and the contact of this with the groups of atoms constituting the food, induces such a grouping of the latter as to result in solubility. This substance, which is contained in the gastric juice in a state of change, is the product of the transformation of the coats of the stomach ; and in order that digestion should continue unimpeded, it is necessary that nothing of an antiseptic nature should be contained in the stomach to retard this fermentative process, or digestion would finally cease.

We know that mercurial preparations possess this antiseptic property, when applied to transformed or decomposed bodies in a remarkable degree. Inject into the veins of a dead subject a solution of corrosive sublimate, and decomposition will be retarded for weeks or months ; or wash flesh with a solution of any mercurial preparation, and, in the hottest weather it will not decompose, but will become exsiccated. The preparations of mercury exert the same effect upon the gastric juice, which is a body in the same state of change as flesh when removed from the influence of the vital force ; that is, they retard and finally terminate the digestive process. For, any thing which arrests the phenomena of fermentation and putrefaction in liquids, also arrests digestion.

There is no body, perhaps, which so penetrates and diffuses itself throughout the system as mercury ; and this we should anticipate, as it is not capable of combining with any one of its organs, not one of which contain in their composition an atom of this metal. These mercurial atoms must then exist in the system

as foreign bodies, and by their continual irritation, act as do all such bodies. That they become diffused throughout the system, we have already given the testimony of medical writers, and it can be easily demonstrated by means of the galvanic battery; for, separate the poles some little distance on any part of the body of an individual who has taken much mercury, and the metal will soon precipitate upon the negative electrode. Then, when it reaches the coats of the stomach, its presence soon terminates that state of change necessary to impart to the bile its decomposing properties, and digestion must necessarily cease. In this way do mercurial preparations retard and finally terminate digestion—they cannot combine chemically with a single organ in the body, and therefore, are totally incapable of inducing in them a normal state, or of curing them when diseased; consequently mercury can act only as an *irritant*, creating diseased action caused by the strong exertions of the organs to eliminate it.

In some diseases, mercury is generally given in large doses, which for awhile retard the disease, and which is just the action we should expect from the antiseptic properties of mercury. A poison is introduced into the system, the action of which upon certain of its organs is to create a disease, which manifests itself by a too rapid metamorphosis of their tissues, or, in other words, by their rapid decomposition. By its antiseptic properties, mercury retards this decomposition, and which will, doubtless, continue as long as the mercury is given; but, experience has proved that this cannot last long, as the irritation of these foreign mercurial atoms soon creates other diseases of the organs, which are worse than the original disease; and, as soon as the antiseptic influence of the mercury ceases, the primary disease recommences its action with greater force than before, as the organs are impaired in their functions by the presence of the irritating atoms of mercury.

We must not anticipate that this antiseptic property of mercury is confined alone to the gastric juice. We are aware that the metamorphosis, or decomposition of the tissues, involves life itself. With each moment of time, there is ensuing in the capillaries a series of changes upon which the vital heat, the growth, and the very existence of the animal depends. The tissues, which have served their office, and may be said to be *worn out*, so far as their duties in the formation of the organism is concerned, are metamorphosed, and combining with the soda in the blood, are converted into bile, which is separated by the liver, and transmitted to the gall bladder as such. This bile is again used in the animal economy, that the combustion of its carbon may develop the vital heat. With each moment of time, this process of the decomposition of the tissues of the body must continue, and should a brief cessation occur, the most fatal consequences would inevitably ensue.

Mercury, by its peculiar antiseptic properties, has a great tendency to prevent, or to retard this decomposition; and there is no doubt but that many of the fatal effects of this mineral, from time to time recorded in our journals, may be attributed to this property which it possesses of drying up organic tissues, or of preventing their ready decomposition. Mercury, we must bear in mind, is readily absorbed by the system, and in the form of minute globules penetrates every organ. It accumulates largely in the blood, and, possessing a strong affinity for oxygen and chlorine, is easily converted into oxides and chlorides, thus doing infinite mischief by decomposing the chloride of sodium, which has its indispensable duty to fulfil, and at the same time abstracting from the blood pure oxygen.

This removing from the blood its necessary constituents, not only effects a vital injury, but the compounds which are formed also exert an influence, which, to say the least, is highly dangerous to life. The bi-chloride of mercury is corrosive sublimate, and that this virulent compound is formed in the combination of mercury with the chlorine of the common salt, which exists in that fluid in large quantity, is rendered certain by the analysis of the blood of persons who have died suddenly and in great agony, after having taken large doses of calomel. Besides, the stomach contains free hydro-chloric acid, the reaction of which with oxide of mercury, or with its proto-chloride (calomel), is to convert them into corrosive sublimate.

With persons afflicted with mercurial disease, we often observe the most distressing effects, such as the dissolution of the bones, the decomposition of the brain and nervous matter, &c. It is not improbable that a chemical action takes place between the substances constituting bone, and the mercury. Although mercury may not have such a strong affinity for phosphoric acid as calcium, under ordinary circumstances, still this affinity may be reversed by a change in those circumstances. We have many instances of this anomaly of chemical affinity in chemistry. If a current of hydrogen gas be passed over hot oxide of iron, the gas decomposes the oxide, combining with its oxygen, and passing off as the vapor of water, while at the same time the metal is reduced. Here we would say, that hydrogen has a greater affinity for oxygen than the metal iron. But if the vapor of hot water be passed over hot iron, the water is decomposed, its oxygen uniting with the iron to form the oxide of iron, while the hydrogen passes off. Here the affinity is reversed.

If a solution of carbonate of ammonium and chloride of calcium be mixed, a decomposition ensues, the newly formed carbonate of calcium being precipitated. Here, then, the affinity of carbonic acid for calcium is greater than for ammonium; but if we take carbonate of calcium, and mix with it chloride of ammonium, by applying a gentle heat, carbonate of ammonium is generated, thus reversing the affinity.



Many instances exist in chemistry of similar reversals of affinity, through the slightest circumstances; and, therefore, it is not improbable that many circumstances transpire, which exalt the affinity of mercury for phosphoric acid over that of calcium. The appearance of the caries in bone, induced by mercury, is just such as would lead us to suspect their causes to be a decomposition effected by that virulent metal; and what is strongly presumptive of the fact is, that the reactions of these caries give strong indications of the presence of mercury.

From these brief remarks, we may perceive that mercury cannot combine with a single tissue of the body, nor in reality exert any effect upon them, except that of an antiseptic, unless it be to decompose some necessary constituent of the blood or organs, through their affinity for it; and, in connection with them, we will now present the nine following facts:

1st. Phosphoric acid pervades nearly every fluid and solid of the human system.

2d. Phosphoric acid and calcium, in the form of phosphate of calcium, constitute a large portion of the composition of human bones.

3d. Phosphoric acid does not act upon metallic mercury, but combines with its oxide, forming phosphate of mercury.

4th. Phosphorous acid differs from phosphoric acid, in containing one preparation less of oxygen; it decomposes all the oxides and salts of mercury, *separating the base in the metallic state*.

5th. The bile is of an alkaline character, holding among its constituents, chloride of sodium, phosphate of sodium, phosphate of calcium, and sodium and calcium, uncombined with any acid.

6th. With the exception of the gastric and pancreatic juices, the mucous secretion of the mouth, throughout the alimentary canal, is of an alkaline character.

7th. Acids and alkalies mutually decompose or neutralize each other, forming new combinations; and the affinity between acids and alkalies appears, generally, to be much greater than between any other known substances in nature.

8th. In whatever soluble form the usual preparations of mercury are introduced into the stomach, they are reduced to an oxide of the metal, previous to being absorbed into the system.

9th. Most acids are capable of combining with the oxides of mercury.

From these facts, in connection with our previous remarks, and independent of the antiseptic influence of mercury, we derive the following inferences:

When any salt of mercury—say a dose of calomel, for instance—has been taken into the stomach, as soon as it has passed through the pyloric orifice into the duodenum, it comes in contact with the bile, which is discharged from the liver into the intestines at this point. Here, as the affinity for hydrochloric acid is stronger

with sodium and calcium, than with mercury, a mutual decomposition ensues, both of the calomel and the alkaline constituents of the bile; the acid of the mercury combines with the sodium and calcium of the bile, forming chlorides of sodium and calcium, at the same time a portion of the phosphoric acid with which they were united, is disengaged and set free; while the calomel, by being deprived of its acid, is reduced to an oxide of mercury—the black oxide, or protoxide, which is the natural oxide of this metal.

In this form, the mercury is carried into the mass of the blood, to be from thence circulated to every part of the system. Combining with the phosphoric acid of the bones, a phosphate of mercury is formed, leaving the bone in a state of oxide of calcium, or common lime; the bony structure being thus chemically decomposed, crumbles and exfoliates.

A similar combination with the phosphoric acid of the nerves and brain, produces nervous debility, neuralgic pains, headache, loss of memory, &c.; and, as the atmospheric changes influence mercury in any form, the individual can predict them with as much precision as the most delicate barometer.

But, pure mercury, or mercury in its metallic state, has been found in various parts of the bodies of those who have used it as medicine;—how could this have been produced from its phosphate? We reply, not from the phosphate, but from the phosphite of mercury, which salt, whenever found, is not permanent, but separates after a time, freeing the phosphorous acid, and leaving the mercury in its metallic state.

Phosphorous acid may be produced by any element capable of abstracting from phosphoric acid a part of its oxygen; and when once formed, and coming in contact with the oxide of mercury, will form the phosphite of mercury, from which, eventually, the mercury will be precipitated or separated into its metallic state, and in which state it may remain in the system for an indefinite period of time. This explanation also affords a clue to an understanding of the statement made by Dr. Goldsmith, in his *Natural History*, that those miners who have been condemned to labor for life in the mercurial ores, often “transpire quicksilver at every pore,” before death releases them from their sufferings.

Thus, we believe we have presented you with a correct explanation of the *modus operandi* of mercury. It may be thought by some, that we possess hereditary or innate prejudices against mercury and other deleterious minerals, and that, on the other hand, we are prepossessed in favor of our own remedial agents. To this idea, we must reply that, whatever may be our prejudices against the one, or our prepossessions in favor of the other, they are all honestly and candidly acquired; they are founded upon that kind of science whose basis is fact, derived from actual experience and observation. What we have said has been expres-

sed in candor, and from that conviction of mind which has been produced by careful study and cool deliberation. Those who are similarly impressed with us, from the evidence which has been given, will corroborate our statement, that mercurials are productive of much evil, and that their employment should be dispensed with.

We have no prejudices against the name of mineral ; and if articles of the mineral kingdom could be so employed as to contribute to the relief of suffering humanity, without at the same time subjecting the organism to accidents or dangers, the occurrence of which would be more intolerable to it than even the pangs of death, we would hastily unite with our professional brethren in their use. But when we have sufficient testimony to satisfactorily convince us that they exert a highly pernicious influence upon the constitution, and cannot be used in any case, even in small quantities, without endangering the health and life of the patient, we are then obliged, in obedience to the demands of our own conscience, of justice, of love to mankind, and of moral duty, to renounce their medicinal application, and to use every honorable and laudable means in our power, to manifest to the world the evils consequent upon their employment.

There are, however, many physicians who believe differently from us in relation to the therapeutical administration of this class of agents, and who view our course as one of personal hostility towards themselves. These, instead of the courteous bearing usually recognized among co-workers in the discovery of scientific truths, manifest towards us, rather the malignant spirit of bitter and relentless enemies. But we make no complainings. Against our professional brethren of other creeds, collectively or individually, as citizens or as physicians, we have nought to say, for, as we have already observed, when we were placed under similar circumstances, we entertained similar opinions with them, but when the light of truth gradually dispelled the mists of ignorance with which we were encircled, we unhesitatingly shook off the fetters which had enchained us ; and though aware that our former associates would level at us the shafts of hatred, slander and persecution, yet we stood forth fearlessly, as we do now, the advocates of Eclectic Reform ; and we have not had occasion to repent, even once, of our change.

We wish it to be particularly understood, however, that it is *the practice* so commonly pursued of administering minerals against which we contend, and not the physician ; and we invite all physicians to cast aside their prejudices and hostile feelings—to investigate the subject in sober earnestness, and if they arrive at the same conclusions as ourselves, to co-operate with us in lessening the afflictions and sufferings of humanity. We court not their friendship—we heed not their enmity,—but we *rejoice* in their co-operation.

